

GRASSES OF NORTH CAROLINA (A FRIENDLY CRITIQUE).—Under the title, THE GRASSES OF NORTH CAROLINA<sup>1</sup>, a very attractive volume has been received for review, “with the request that in notices or reviews attention be called to the price”. How could one help noting \$7.50 for a book of only 276 pages (including a few blanks), the price so in contrast with the more modest charges for much larger and more comprehensive volumes covering a vastly greater area? Those who can raise the money will have a well printed and attractively illustrated book, with reproductions from photographs of overfed (on grass) cattle, “balds”, savannas, some of the more conspicuous grasses and beautifully drawn small line-illustrations of many of the species and, perhaps of most interest to students of different or adjacent areas, 298 small maps showing the counties in which most of the accepted species are known, at least to the author. There are excellent keys, including one based on vegetative characters, this with drawings of leaf-bases, sheaths, ligules, etc. of a few species, but, rather strikingly, not of rhizomes and bases.

In recognition of species the evaluations in Hitchcock's *Manual of the Grasses of the United States* (1040 pp., 1696 wonderfully fine figs. for \$1.75) are largely accepted but a few not known to Hitchcock, including one described by the reviewer, are admitted; but many later studies by those who have demonstrated that the actual types, when examined, lead to different interpretations, are passed by or in some cases dismissed as not acceptable, although with an apology like: “Judging from a photograph of the type [the photograph published by the present reviewer], there seems to be some justification for this opinion”. What more than a revealing photograph of the type is needed? If the actual types and the original descriptions agreeing with them are discarded as of no account, what basis is there which can lead to stability?

But so faithfully does the author accept the Washington verdict, right or demonstratedly wrong, that he “has drawn freely from Professor Hitchcock's *Manual*”. The freedom in drawing from the work of another is exemplified in some of the keys, for instance under *Paspalum*, where word-for-word passages are taken over, without even the simple changes which the copyrighting and very high pricing of the new book would suggest as desirable. Such passages as these could readily have been so stated, after full understanding of the plants, as to avoid essential imitation:

“Blades conspicuously ciliate, otherwise nearly glabrous.

Blades relatively short, rounded at base and recurved-ascending; foliage aggregate toward the base, the upper culm relatively naked; spikelets glabrous, mostly 1.5–1.6 mm. long.”—*Hitchcock*, p. 577.

“Blades conspicuously ciliate, otherwise glabrous or nearly so, relatively short; rounded at base; foliage aggregate toward the base, the upper culm slender and relatively naked; spikelets 1.5 to 1.6 mm. long, glabrous.”—*Blomquist*, p. 125.

There are available synonyms for “conspicuously”, “nearly”, “relatively”, “aggregate”, etc. which could have been used; for, when a volume (*Hitchcock's Manual*), prepared at great expense with federal funds collected from the country's taxpayers and distributed gratis or at a low price to all who need it, has leading phrases taken over directly into a copyrighted and forbiddingly priced and much smaller book, some questions must arise at least as to complete originality of the work and its copyrighting.

A “notice” might stop with these three paragraphs and then add the “release” sent out by the publishers with the assertion that the new book “includes the majority of the grasses of the eastern United States . . . 360 species and varieties”; but immediately one's curiosity is aroused, for the

<sup>1</sup> *The Grasses of North Carolina* by H. L. BLOMQUIST, Professor of Botany, Duke University. vi + 276 pages, 249 figs., 298 small maps. Durham, N. C. Duke University Press, 1948. \$7.50

reviewer has recently sent to the printer a large volume covering the flora of temperate eastern North America north of North Carolina, Tennessee and Arkansas and south of the Labrador Peninsula and the north shore of Lake Superior, with about 650 grasses recognized in the area south of Canada. In view of the fact that in the southeastern United States, south of Virginia and Kentucky, Small admitted 180 additional species, we get a total in the "eastern United States" of about 830 recognized grasses, of which 360 is scarcely a majority. It, therefore, seems important to learn why a book produced through financial assistance both in assembling the matter and in its publication (acknowledged on p. vi) is put on the market at a price which approaches that of Small's privately issued *Manual*, with 1554 pages of smaller type and with more than 1500 analytical drawings of generic details. Immediately one checks to determine the completeness of the new book and its recognition of the records of earlier and cautious workers on the flora of North Carolina; and, although the author has himself been assiduous in collecting and studying the grasses of portions of his state, it is disappointing to find in the new book no obvious mention of the earlier great students of the North Carolina flora: for instance, such a distinguished former leader in botanical research in the state as HARDY BRYAN CROOM (1797-1837) who, while living in Craven County, prepared his detailed and posthumously published *Catalogue of Plants, native or naturalized, in the Vicinity of New Bern, North Carolina* (1837). Croom, a Corresponding Member of the Academy of Sciences of Philadelphia, and of the New York Lyceum of Natural History, sent or took his more critical plants to Torrey and they are presumably preserved in the Torrey Herbarium; and Torrey perpetuated his memory by the genus *Croomia*, while the famous genus *Torreya* was based by Arnott on material discovered by Croom in Florida. The North Carolina records of such a careful botanist of "charming personality and scholarly attainments"<sup>2</sup> should not be neglected. MOSES ASHLEY CURTIS (1808-1872), perhaps the most distinguished botanist of North Carolina, member of the American Philosophical Society and honorary member of many other learned societies and academies, published a *Catalogue of the Plants growing spontaneously around Wilmington, North Carolina* (1835), a *Catalogue of the Indigenous and naturalized Plants of the State* (1867) and many papers recording new discoveries. It is too bad to have neglected his careful records. THOMAS FANNING WOOD (1841-1892) LL.D. hon., Univ. N. C., and MICHAEL GERALD MCCARTHY (1858-1915), who for 20 years was "state botanist" and who, in checking identities, used to visit the Gray Herbarium and other large northern collections, cooperated in 1887 in publishing on the flora of Dr. Wood's home-town, Wilmington. Many of their records would have made important additions to the new book, for in all or nearly all cases they were of unmistakable species.

Croom's enumeration would have supplied records for Craven County not indicated on the maps: *Melica mutica*, *Sporobolus clandestinus*, *Zizania aquatica*, *Amphicarpon Purshii*, etc. Curtis's Wilmington list would have supplied dots for a county sixty to one hundred miles from the nearest one indicated for *Festuca obtusa*, *Anthoxanthum odoratum*, *Hydrochloa caroliniensis*, etc.; while the Wood and McCarthy enumeration for Wilmington would have supplied extensions of indicated range for 24 species and it recorded 3 species of grasses

<sup>2</sup> As showing the difference between the usages of the "scholarly" Croom and the writing of English names too often found in the work of many who lack feeling for careful grammatical construction, witness the following. In Croom's *Catalogue*: *Umbrella-tree*, *Venus' Fly-trap*, *Red maple*, *Touch-me-not*, *Wood-sorrel*, *Rattle-box*, *Wild Indigo*, *Wild oats*, *Broom-grass*, *Rice-grass*, etc., with evident feeling for the careful use of hyphens to indicate grammatical construction. In *Grasses of North Carolina*: FOWL MANNAGRASS, ORCHARD GRASS, CRESTED DOGTAIL GRASS, WILDRICE, OATGRASS, GOOSE-GRASS, SWEET VERNALGRASS, and TOOTHACHE OR ORANGE GRASS. One would prefer to chew ORANGE-GRASS (because of the fragrance of the bruised bases) instead of TOOTHACHE.

not in the new book: *Agrostis verticillata*, *Aristida spiciformis* (cited by Hitchcock from South Carolina) and *Cenchrus myosuroides*. Nuttall's *Paspalum racemosum*, reduced by Mrs. Chase to *P. bifidum*, was from "Florida to North Carolina", although she stated the northern limit as in South Carolina. In Curtis's *Catalogue* of 1867 this unique and unmistakable species was indicated (p. 65) for the breadth of the state: "Coast to Cherokee". Since the species is found over the line, in dry sandy woods of Sussex County, Virginia, Curtis's record can hardly be assumed to have been wholly erroneous, at least without further evidence; and his *P. praecox* from "Low. Dist. to Wake." gives an extension of local range, while his *P. fluitans* (one of the cases in which the taxonomic facts are apparently distasteful to the author of the book) from "Lincoln Co." gives something more tangible than "is to be expected in North Carolina". If all other species "to be expected in North Carolina" had been included as numbered species the score would more nearly approach the "majority" above noted.

Other publications on the flora of North Carolina, if taken into account, would add to the records. Thus, Kearney's *Report on a Botanical Survey of the Dismal Swamp Region* records *Zizania aquatica* from near Edenton, this species indicated by Blomquist from only the two southernmost coastal counties, 150 miles away, but recently collected near Edenton by Godfrey, no. 5337 (in Gray Herb.). Much later, in Peattie's *Flora of the Tryon Region* (1928-1931), more than 40 grasses would have supplied dots (now missing) for Polk County in the Blue Ridge and one species not noted in the new book. Incidentally, in Am. Journ. Sci. ser. 2, vii. 410 (1849) Curtis cited *Polypogon monspeliensis* from "coast of N. Car. as far north at least as Ocracoke Inlet!" That was a sufficient statement to justify a dot (now missing) on map 94 at the outer and southernmost corner of Hyde County. Very much earlier, as far back as 1812, important records from North Carolina were made. Under *Leersia lenticularis*, Professor Blomquist, recording the only North Carolina station known to him, in Carteret County, stated that the voucher has not been located. But nearly a century and a half ago Frederick Pursh recorded it from northeastern North Carolina, a fact familiar to Curtis, who cited Pursh's locality. In his Fl. Am. Sept. i. 62 (1814) Pursh wrote: "Illinois and Virginia . . . This singular and elegant grass I found on the islands of Roanoke river in North Carolina, and observed it catching flies in the same manner as *Dionoea muscipula*: the valves of the corolla are nearly of the same structure as the leaves of that plant. I communicated specimens with this particular circumstance to Dr. B. S. Barton of Philadelphia, who has made mention of it in a paper on the irritability of plants". Barton's note was in his paper, *Desultory Observations concerning certain vegetable Muscicapae* in Tilloch's Phil. Mag. xxxix. 108 (1812): "The grass to which I allude is the *Leersia lenticularis* . . . The plant is a native of marshy grounds of the Illinois country, of Virginia, North Carolina &c". Here, of course, was the origin of the name "Catch-fly grass". Barton and Pursh knew the plant also from Virginia, although Hitchcock did not recognize it in the East from north of South Carolina; but it is very abundant on many bottomlands of southeastern Virginia, thence northward into Maryland! The bottomlands of the Meherrin, Nottoway and Blackwater systems are often filled by it, and the bottomlands of these rivers, passing into northeastern North Carolina, must surely have it.

This note on the old records of *Leersia lenticularis* in northeastern North Carolina inevitably leads to the observation that about half the maps in the new work have no indication of species as found in the northeastern or even the eastern (Coastal Plain) section of the state; and that, except for the Wilmington region, most recent North Carolina botanists have largely clung to the Piedmont and the Blue Ridge. So very many of the plants, unrecognized as growing in northeastern North Carolina, occur just over the line in southeastern Virginia that it is most difficult to imagine them sharply discriminating

against adjacent North Carolina: *Poa paradoxa*, *P. Chapmanniana*, *P. cuspidata*, *Eragrostis hypnoides*, *Uniola latifolia*, *Melica mutica*, *Agrostis Elliottiana*, *Cinna arundinacea*, *Alopecurus carolinianus*, *Aristida oligantha*, *A. lanosa*, *Leersia hexandra*, *Paspalum lentiferum*, *Panicum yadkinense*, *P. caerulescens*, *P. Wrightianum*, *P. hians*, *Cenchrus incertus*, *Sorghastrum Elliottii*, etc., etc. In fact, one such species, as above noted, was secured by Kearney and by Godfrey. Some others, slightly closing gaps, these noted from labels in the Gray Herbarium, are the following: *Poa cuspidata* from west of Fairfield, Tyrrell Co., Godfrey, no. 3917; *Sphenopholis filiformis* from Raleigh, Wake Co., Godfrey, no. 3559, and from Delgado, New Hanover Co., April 21, 1923, J. R. Churchill; *Sporobolus clandestinus* from Wyanoke, Gates Co., Fernald & Long, no. 11,524; and *Ctenium aromaticum* from Pinehurst, Moore Co., July 1897, Otto Katzenstein, and from Pine Bluff Wiegand & Manning, no. 337, also from 7 miles southwest of Wilmington, in Brunswick Co., Godfrey, no. 4134.

Close to the Carolina line (from a few rods up to 10 miles away) and on river-systems flowing through eastern North Carolina there are many species not yet recorded from the latter state. These suggest some worth-while botanizing: *Bromus nottowayanus* Fern. (characteristic of bottomland of the river which, uniting with the Blackwater, forms the Chowan in North Carolina); *Glyceria arkansana* Fern., positively dominant on bottomland of the Meherrin River system east of Emporia, Virginia, the Meherrin winding back-and-forth along the state line in Northampton County, North Carolina, and finally crossing Hertford County; *Eragrostis multicaulis* Steud. (*E. peregrina* Wieg.), a characteristic weed of roadsides, paths and railroads, which has presumably been carried by vehicles south of Franklin, Virginia; *Triodia Chapmani* (Small) Bush, a beautiful species of pineland from Southampton to Princess Anne County, Virginia, sometimes, as at Factory Hill in Nansemond, only a stone's throw from Gates County, North Carolina<sup>3</sup>; or *Muhlenbergia brachyphylla* Bush, characteristic of flat pinelands of southeastern Virginia and, like *M. glabriflora*, a plant primarily of the Mississippi Basin but with isolated stations on the Coastal Plain or in the Piedmont. Unfortunately this eastern isolation of *M. glabriflora* got wholly obscured in the new book on North Carolina grasses, for, although as yet known east of the Mississippi drainage at only one station in Maryland, one in Brunswick County, Virginia, and another in Durham County, North Carolina, the broad range is here given as "Newfoundland to British Columbia, south to North Carolina, Kentucky, Oklahoma, and Arizona". Hitchcock, in his *Manual*, had more accurately said "Low woods, Maryland, Indiana, Illinois, Missouri, and Texas", although his map 773 had no dot for Maryland. The evident source of the newly stated range (with North Carolina substituted for Maryland) is Hitchcock's statement of range for what proves to be a bi- or tripartite species, *M. racemosa* sensu Hitchcock: "Newfoundland to British Columbia, south to Maryland, Kentucky, Oklahoma, and Arizona".

The upshot seems to be, that there is very much close work remaining to be done, especially on the Coastal Plain of northeastern North Carolina, before anything truly approaching a complete list of plants of the state and their distribution can be made. The discriminating worker, exploring all types of habitat from the lower Roanoke to the coast from False Cape southward, should quickly add to the known flora of the state many of the 65 grasses of adjacent Virginia not recorded from North Carolina, more than two score of sedges similarly known, and many scores of showier plants. These, if he follows the traditional practice of scientists for many decades, he will record in appropriate journals in his field, as a report of progress. The results would then reach those really prepared to use them, for most scientific workers are not so endowed as to pay an unusually high price for obviously incomplete work.

<sup>3</sup> At the last moment *Elymus riparius*, found near the state-line in Virginia, is removed from these few examples because Hitchcock definitely cites and maps it from North Carolina.

The reviewer makes the above criticisms and suggestions in all friendliness for an active and coöperative fellow-worker and with full realization of the errors which too often make their way into his own work. He is not alone, he finds, in regretting that a handsome and expensive book should have been published without more thorough examination of the flora of a mostly neglected portion of the state and without full appreciation of the work done by earlier students of the North Carolina flora. The painstaking examples of such distinguished masters as Croom, M. A. Curtis, Wood and McCarthy, remote from large collections for comparison but achieving outstanding results, should inspire us all.—M. L. F.

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A NEW MOSS FROM NEBRASKA.—*PTERIGONEURUM SUBSESSILE* (Brid.) Jur., var. **Kieneri**, var. nov. A forma typica differt: lamellis foliorum humilibus; capsula unacum pedicello decidua, ut in *Phascaceis*, tandem ad sporulas emittendas disrupta, operculo basi minima non deciduo (calyptra cucullata?).—NEBRASKA: *Kiener* 10627 (in part).

The plants in this collection are of two forms. One is nearly typical. The other, var. *Kieneri*, possesses an altogether different type of sporophyte, in having a capsule with a non-dehiscent lid; and the seta, capsule and lid often fall as one, the seta having broken away near its base. The spores are liberated through rupture of the capsule-wall. The calyptra seems to be cucullate.

This condition, of a species or group of closely related species having in some instances a persistent and in others a deciduous operculum, is not unusual, for past authors have made special note of it, especially with *Hymenostomum rostellatum* (Brid.) Schimp. Some authors place the forms in separate genera, while others lump them into one species.

The novelty described above was found in a set of Nebraska mosses sent to the writer for determination by Dr. Walter Kiener.—HERBERT HABEEB, Grand Falls, New Brunswick.

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